

## **REMARKS**

In the Office Action mailed April 18, 2006, the Examiner noted that claims 1-15 were pending in the application and claims 1, 4, 5, 8-10, 13, 14 and 15 were rejected. By this amendment, new claim 16 has been added. Thus, claims 1-16 are pending in the application. The Examiner's rejection is traversed below.

### **Rejection Under 35 U.S.C. §102**

On page 3 of the Office Action the Examiner rejected claims 1, 4, 5, 8-10, 13, 14 and 15 under 35 U.S.C. §102 as anticipated by newly cited U.S. Patent 6,370,175 to Ikeda et al. (Ikeda). In the rejection, the Office Action relied upon Figures 1, 2 and 22 of Ikeda. On page 3, the Office Action contended that direct current source 11 in Figure 1 outputs the first bias current, the modulation current source 12 in Figure 1 outputs the second bias current and the modulation current source 13 in Figure 1 outputs the pulse current. The Office Action also contended that the chart in Figure 2 described the characteristics of the supplied currents to the laser.

### **U.S. Patent 6,370,175 to Ikeda**

Newly cited Ikeda is directed to a laser driving apparatus that precisely corrects the luminous energy of a laser beam on a scanned surface which varies according to an angle of incidence with the scanned surface. Claim 2 of the Ikeda patent claims a laser driving apparatus for driving a laser of which the output beam is scanned on a scanned surface via a scanning optical system. Claim 2 includes as one of its elements that the laser driving apparatus has a generation means for generating a correction value for correcting the variation of an output beam according to an angle of incidence with the scanned surface.

### **Claim 1 Patentably Distinguishes Over the Prior Art**

Claim 1 is directed to a driver circuit for driving a semiconductor laser in accordance with a data signal including data generated in bursts, comprising:

first bias current supply means for generating, at least at a time of non-output of data, a first bias current for driving the semiconductor laser in a predetermined area within a spontaneous emission area, to supply the first bias current to the semiconductor laser;

signal processing means for generating a pulse current control signal in which the data signal is delayed, using only the data signal, and generating a second bias current control signal that rises more rapidly by a predetermined time than the rise of the burst data included in the pulse current control signal;

pulse current supply means for generating a pulse current in accordance with the pulse current control signal generated in said signal processing means, to supply the pulse current to the semiconductor laser; and

second bias current supply means for generating a second bias current for driving the semiconductor laser in a predetermined area within the spontaneous emission area in accordance with the second bias current control signal generated in said signal processing means, to supply the second bias current to the semiconductor laser.

Applicant has reviewed Figures 1 and 2 of Ikeda referenced by the Examiner and is unable to locate any teaching of a signal processing means for generating a pulse current control signal in which the data signal is delayed, using only the data signal, and generating a second bias control signal that rises more rapidly by a predetermined time than the rise of the burst data included in the pulse current control signal. The Office Action asserts that Ikeda anticipates claims 1, 4, 5, 8-10 and 13-15 by contending that a figure depicting a laser driving circuit of which the output beam is scanned on a scanned surface via a scanning optical system is analogous to a laser driving circuit for effective data signal transmission including data generated in bursts.

Although laser driving circuits in general may share some similar characteristics due to the basic physical nature of laser operation, Applicant respectfully submits that the present invention is patentably distinguishable from Ikeda, at least because Ikeda is directed to laser output that is scanned on a scanned surface, and the present invention, for example in claim 1, describes driving a semiconductor laser in accordance with a signal including data generated in bursts. Thus, Applicant is unable to locate any teaching in Ikeda of a signal processing means for generating a pulse current control signal in which the data signal is delayed, using only the data signal, and generating a second bias current control signal that rises more rapidly by a predetermined time than the rise of the burst data included in the pulse current control signal.

Referring to the specific language of claim 1, Applicant respectfully submits that Ikeda fails to teach:

signal processing means for generating a pulse current control signal in which the data signal is delayed, using only the data signal, and generating a second bias current control signal that rises more rapidly by a predetermined time than the rise of the burst data included in the pulse current control signal;

Therefore, Applicant respectfully submits that claim 1 patentably distinguishes over the prior art.

Claims 4, 5, and 8-10 depend, directly or indirectly from claim 1 and include all of the

features of that claim, plus additional features which are not taught or suggested by the prior art. Therefore, it is submitted that claims 4,5 and 8-10 patentably distinguish over the prior art.

#### Claim 13

Independent claim 13 is directed to a method of claim 1, and recites in relevant part:

generating a pulse current control signal in which the data signal is delayed, using only the data signal, and generating a second bias current control signal that rises more rapidly by a predetermined time than the rise of burst data included in the pulse current control signal;

Thus, claim 13 patentably distinguishes over the prior art.

#### Claims 14 and 15

Independent claim 14 is directed to a method for driving a semiconductor laser in accordance with data signals, including data generated in bursts, comprising:

supplying a first bias current for driving the semiconductor laser at least at a time of non-output of data, to drive the semiconductor laser in a spontaneous emission area;

supplying a second bias current to the semiconductor laser prior to data transmission by delaying a data signal; and

supplying a pulse current to the semiconductor laser a predetermined time after commencement of supplying the second bias current.

Independent claim 15 is directed to a method for driving a semiconductor laser in accordance with data signals, comprising:

generating data in bursts;

supplying a first bias current for driving the semiconductor laser at least at a time of non-output of data;

supplying a second bias current for driving the semiconductor laser in a predetermined area within a spontaneous emission area in accordance with a second bias current control signal to supply the second bias current to the semiconductor laser; and

supplying a pulse current to the semiconductor laser a predetermined time after commencement of supplying the second bias current.

Applicant is unable to locate any teaching in Ikeda cited by the Examiner where the method of driving a semiconductor laser is in accordance with data signals, specifically with data in bursts. Thus, Applicant respectfully submits that claims 14 and 15 patentably distinguish over the prior art.

### New Claim 16

New independent claim 16 recites in relevant part:

A method for driving a semiconductor laser in accordance with data signals, including data generated in bursts, comprising:

generating a second bias current for driving the semiconductor laser in a predetermined area within the spontaneous emission area in accordance with the second bias current control signal, to supply the second bias current to the semiconductor laser.

Therefore, it is submitted that claim 16 patentably distinguishes over the prior art.

### Allowable Subject Matter

On page 4 the Office Action stated that claims 2, 3, 6, 7, 11 and 12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Applicant notes that the subject matter in claims 2, 3, 6, 7, 11 and 12 are allowable if rewritten in independent form, but has not rewritten these claims because Applicant respectfully submits that the claims they depend from are allowable for the reasons indicated above.

### Summary

Applicant respectfully submits that the Ikeda reference does not teach all of the features of the present claimed invention. Thus, all claims in the application are now in condition for allowance. Reconsideration of the claims and an early notice of allowance are earnestly solicited.

If there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

STAAS & HALSEY LLP

Date: July 17, 2006

By: 

John C. Garvey  
Registration No. 28,607

1201 New York Ave, N.W., Suite 700  
Washington, D.C. 20005  
Telephone: (202) 434-1500  
Facsimile: (202) 434-1501